**3.4 Second Derivative Test concavity**

1. In your own words, explain what it means to be a point of inflection.

2. If a function has a critical number and the second derivative is positive, what does that imply about the function at this location?

3. If a function has a critical number and the second derivative is negative, what does that imply about the function at this location?

**For the following functions:**

1. **make a number line for the second derivative**
2. **interpret your signs on the number line for points of inflection and concavity**

4.

5.

6.

7.

8.

**For 9-10, Use either the first or second derivative tests to find all max/min locations.**

9. 10.

11. Think about a function where its derivative is always increasing. Sketch a possible graph for both the original function and the second derivative.

12. Let S represent the weekly sales for Subway in Fort Gibson. What can be said for S’ and S” if

a. Sales are increasing, but at a slower rate

b. rate of change of sales is constant

c. sales are steadily increasing

13. If the graph of a function’s second derivative is linear, what type must the graph be?

14. If a graph is linear, what type of graph must its second derivative be?

15. If a company’s sales are increasing at an increasing rate, what does that mean about the second derivative for this company’s sales model?